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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,679	01/04/2002	Stephen Leslie Buchwalter	EN9-98-117-US2	9725

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SCHMEISER, OLSEN + WATTS
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EXAMINER

BROCK II, PAUL E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 02/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,679

Applicant(s)

BUCHWALTER ET AL.

Examiner

Paul E Brock II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 10-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 10 – 29 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the search and the examination can be made without serious burden. This is not found persuasive because it is not clear what the applicant is arguing. The applicant has amended the original group II claims, 28 and 29, to read on the group I invention. Therefore, election is moot, and the entire application will be examined based on the single group I election.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 11 – 16, 20, 21 and 24 - 27 are objected to because of the following informalities: In claim 11, “wherein forming a mineral layer” should be -- wherein forming the mineral layer --; in claim 12 “wherein forming a mineral layer” should be -- wherein forming the mineral layer -; in claim 13 “wherein forming a mineral layer” should be -- wherein forming the mineral layer --; also in claim 13 “the clean surface” should be -- a clean surface --; in claim 14 “wherein providing a metallic plate “ should be -- wherein providing the metallic plate --; in claims 20 and 21 “The structure of” should be -- The method of --; in claim 15 “wherein forming an adhesion promoter layer” should be -- wherein forming the adhesion promoter layer --; in claim 16 “wherein forming an adhesion promoter layer” should be -- wherein forming the adhesion

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promoter layer --; in claim 24, "wherein forming a mineral layer" should be -- wherein forming the mineral layer --; in claim 26, "wherein forming a mineral layer" should be -- wherein forming the mineral layer --; in claim 27 "wherein forming an adhesion promoter layer" should be -- wherein forming the adhesion promoter layer --; in claim 25 "wherein forming a mineral layer" should be -- wherein forming the mineral layer --; Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 10, 11, 14, 16, 20, 24, and 26 – 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimura et al. (USPAT 5604380, Nishimura).

With regard to claim 10, Nishimura discloses in figure 2a a method for forming an electronic structure. Nishimura discloses in figure 2a providing a metallic plate (3). Nishimura discloses in figure 2a forming a mineral layer (4) on the metallic plate. Nishimura discloses in figure 2a forming an adhesion promoter layer (5) on the mineral layer.

With regard to claim 11, Nishimura discloses in figure 2a wherein forming the mineral layer includes forming the mineral layer having a mineral selected from the group consisting of silicon dioxide.

With regard to claim 14, Nishimura discloses in figure 2a wherein providing the metallic plate includes providing the metallic plate having a metallic substance of aluminum.

With regard to claim 16, Nishimura discloses in figure 2a wherein forming the adhesion promoter layer includes forming the adhesion promoter layer having a silane from the group consisting of 3-glycidoxypopyltrimethoxysilane.

With regard to claim 20, Nishimura discloses in figure 2c further comprising bonding the adhesion promoter layer to a structural adhesive (6).

With regard to claim 24, Nishimura discloses in figure 2a wherein forming the mineral layer comprises forming the mineral layer covering an edge surface of the metallic plate and a portion of a top surface of the metallic plate.

With regard to claim 26, Nishimura discloses in figure 2a wherein forming the mineral layer includes forming the mineral layer having an approximately uniform thickness.

With regard to claim 27, Nishimura discloses in figure 2a wherein forming the adhesion promoter layer includes forming the adhesion promoter layer having an adhesion promoter comprising a silane.

With regard to claim 28, Nishimura discloses in figure 2a a method for forming an electronic structure. Nishimura discloses in figure 2a bonding a mineral layer to a metallic plate. Nishimura discloses in figure 2a covalently bonding an adhesion promoter layer to the mineral layer.

With regard to claim 29, Nishimura discloses in figure 2a a method for forming an electronic structure. Nishimura discloses in figure 2a bonding a mineral layer to a metallic plate.

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Nishimura discloses in figure 2a bonding an adhesion promoter layer to the mineral layer such that said bonding to the mineral layer is moisture resistant.

5. Claims 10 and 17 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kozono (USPAT 5619070, Kozono).

With regard to claim 10, Kozono discloses in figure 2a a method for forming an electronic structure. Kozono discloses in figure 2a providing a metallic plate (15). Kozono discloses in figure 2a forming a mineral layer (14) on the metallic plate. Kozono discloses in figure 2a forming an adhesion promoter layer (13) on the mineral layer.

With regard to claim 17, Kozono discloses in figure 2a providing an electronic assembly (11). Kozono discloses in figure 2a providing an adhesive material (19). Kozono discloses in figure 2a coupling the metallic plate to the electronic assembly by interfacing the adhesive material between the adhesion promoter layer and the electronic assembly. Kozono discloses in figure 2a providing an electronic carrier (18). Kozono discloses in figure 2a coupling the electronic assembly to the electronic carrier. Kozono discloses in figure 2a coupling the metallic plate to the electronic carrier by interfacing the adhesive material between the adhesion promoter layer and the electronic carrier.

With regard to claim 18, Kozono discloses in figure 2a wherein providing an adhesive material includes providing the adhesive material having a structural epoxy adhesive.

With regard to claim 19, Kozono discloses in figure 2a wherein providing a metallic plate includes providing the metallic plate having a coefficient of thermal expansion (CTE) that exceeds a CTE of the electronic assembly.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to claim 10 above, and further in view of Chen et al. (USPAT 5413950, Chen).

Nishimura does not teach a thickness for the mineral layer. Chen teaches in column 5, lines 25 – 34 wherein forming a mineral layer includes forming the mineral layer having a thickness of about 300 angstroms. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the thickness of the mineral layer of Chen in the method of Nishimura in order to protect against contamination as stated by Chen in column 5, lines 25 – 34.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to claim 10 above, and further in view of Nishino et al. (USPAT 5586385, Nishino).

Nishimura discloses in figure 2a wherein forming the mineral layer includes depositing the mineral layer on a clean surface of the metallic plate. Nishimura is silent to forming the mineral layer including sputtering the mineral layer on a clean surface of the metallic plate. Nishino discloses in column 5, lines 13 – 17 wherein forming a mineral layer includes depositing

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the mineral layer on a clean surface of a metallic plate. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the sputtering method of Nishino in the method of Nishimura in order to use an alternate forming method that is sufficient to form the layer and less costly.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to claim 10 above, and further in view of Ichinose et al. (USPAT 5681402, Ichinose).

Nishimura does not teach wherein forming the adhesion promoter layer includes forming the adhesion promoter layer having an adhesion promoter selected from the group consisting of a titanate, a zirconate, and an aluminate. Ichinose teaches in column 7, lines 15 – 21 wherein forming an adhesion promoter layer includes forming the adhesion promoter layer having an adhesion promoter consisting of a titanate. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the titanate of Ichinose in the method of Nishimura in order to control the interface between dissimilar materials as stated by Ichinose in column 7, lines 15 – 21.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to claim 10 above, and further in view of Robeson et al. (GB PAT 2297503, Robeson).

Nishimura is silent to the thickness of the adhesion promoter layer. Robeson teaches on pages 2, lines 18 – 24 wherein an adhesion promoter layer has a thickness of at least a monolayer. It would have been obvious to one of ordinary skill in the art at the time of the

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present invention to use the thickness of Robeson in the method of Nishimura in order to provide a savings on material costs.

11. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to claim 10 above, and further in view of one of ordinary skill in the art.

Nishimura discloses in figure 2a wherein the adhesion promoting layer is a chemical compound. It is not clear if the adhesion promoting layer of Nishimura is either crystalline or amorphous. It is well known in the art to have an adhesion promoting layers of a chemical compound taking either a crystalline or an amorphous structure. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use an amorphous or crystalline adhesion promoting layer in order to choose a structure which is desirable for the particular application depending on conductivity and surface tension properties desired.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ozawa, Mertol, Makeswari et al., Kozono, Johnson, Hotta, Bernier et al., and Akram all disclose a metal substrate in support of a semiconductor package.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
February 4, 2003



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